

The CERCular

Coastal Engineering Research Center

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SandyDuck '97

by William A. Birkemeier¹

With the arrival of researchers from the Center for Coastal Studies at Scripps Institution of Oceanography (SIO), La Jolla, CA, in June 1997, the U.S. Army Engineer Waterways Experiment Station (WES), Coastal and Hydraulics Laboratory (CHL), Field Research Facility (FRF), Duck, NC, will begin hosting SandyDuck '97, an ambitious nearshore field experiment that has been 7 years in the making. This early start was required to ensure that the over-400 sensors being deployed will be installed and operational by the time the 6-week measurement period begins 22 September 1997.

SandyDuck concludes a recent series of increasingly complex, multi-investigator, multi-agency, field measurement efforts held at the FRF. This series began in 1990 with the Duck Experiment on Low-frequency and Incident-band Long-shore and Across-shore Hydrodynamics (DELILAH), followed in 1994 by DUCK94. These experiments evolved from scientific and pragmatic successes of prior work at the FRF (back to 1981), and have the basic objectives of improving fundamental understanding and modeling of surf zone physics. The emphasis in DELILAH was surf zone hydrodynamics in the presence of a chang-

ing barred bathymetry. DUCK94 and SandyDuck '97 have added components to resolve sediment transport and morphologic evolution at bed form scales from ripples to nearshore bars. DUCK94 was designed as a pilot effort to evaluate new instruments and procedures required for the more comprehensive SandyDuck '97 experiment. The experiments have been cooperatively supported by the Coastal Research and Development Program of the U.S. Army Corps of Engineers, the Coastal Dynamics Program of the Office of Naval Research, and the Marine and Coastal Geologic Surveys Program of the United States Geological Survey.

Background

Following the success of DELILAH, and motivated by a necessity to promote research into coastal sediment transport, program managers of the sponsoring agencies responded to interest within the coastal research community for further field work. The following focus topics evolved and were established as fundamental to improving understanding of surf zone sediment transport:

- Small- and medium-scale sediment transport and morphology.
- Wave shoaling, wave breaking, and nearshore circulation.
- Swash processes, including sediment motion.

These objectives have continued to guide the SandyDuck '97 experiment plan. Response to the experiments has been overwhelming. With the continuing DUCK94 experimenters and the addition of several new ones, there are now 20 participating organizations (Table 1). A total of 26 experiments are planned, involving more than 100 scientists, students, and technicians.

The FRF staff has been preparing the necessary infrastructure support to accommodate this influx of researchers. Ten trailers will be installed to serve as offices and data collection centers. The trailers will be linked to each other and to the Internet through fiber-optic cables. Over 100 computers will be added to the FRF's local area network. The pipes, cables, boats, and divers required to deploy and maintain the sensors will fully utilize all the resources of the FRF, including the Coastal Research Amphibious Buggy (CRAB), Lighter Amphibious Resupply Craft-5 (LARC-V), and several all-terrain forklifts. Because these experiments are planned for the fall in anticipation of early nor'easters and a possible hurricane (or two), FRF experience and expertise will also be called upon to help ensure the survival of the deployed instruments.

¹William A. Birkemeier is Chief of the WES Field Research Facility and SandyDuck '97 principal coordinator.

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SandyDuck '97 Experiments

Most of the core DUCK94 experiments are being repeated, with improvements based on experience gained in DUCK94 and to take advantage of two major enhancements in the basic experiment design. DUCK94 revealed that near-shore dynamics are far less uniform alongshore than had previously been assumed. Consequently, instruments will be added to expand

longshore coverage of currents, bottom changes, and sediment transport. Accurate, spatially detailed measurements of sea surface elevation, the gradient of which is an $O(1)$ force in the surf zone, have been missing from all prior Duck experiments. As the second enhancement to the experiment plan, new instruments will be deployed to resolve this very important component of nearshore dynamics.

Table 2 lists the 26 basic studies, along with the principal investigators

and their primary focus areas for SandyDuck '97. Critical to the experiment is the surf zone array of in situ instruments. This extensive array of instrumentation is shown in Figure 1. The design of this array was led by Dr. Edward Thornton from the Naval Postgraduate School, Monterey, CA, a longtime participant in Duck experiments. The design results from discussion with the various investigators, consideration of relevant scales required to address SandyDuck '97 objectives, and guidance gained using previously measured velocity data and sediment transport modeling.

Central to the surf zone array are instrument frames (Experiment 4 in Table 2), each containing an electromagnetic current meter, a pressure gauge, an acoustic altimeter, and a thermometer. In DUCK94, a single cross-shore array of the altimeters (Figure 2) permitted the first comprehensive real-time measurements of bottom changes, including monitoring the offshore movement of the nearshore bar. During SandyDuck '97, Drs. Elgar, Herbers, O'Reilly, and Guza will be deploying the frames (small "+" signs in Figure 1) in multiple lines, and at varying spacing, to measure nearshore dynamics and bed level changes in both cross-shore and longshore directions.

Drs. Thornton and Stanton (Experiment 24) are deploying a complementary spatial array of manometers (small solid circles in Figure 1) which will provide precise measurement of the water surface slope, critical to understanding longshore currents. Additionally, they will be deploying an updated version of their DUCK94 instrumented sled. This sled will be equipped with current meters, pressure sensors, optical backscattering sensors, rotating pencil-beam acoustic altimeters, and a Bistatic Coherent Doppler Velocity/Sediment meter, along with other sensors. The sled will be deployed by the CRAB (Figure 3) to provide mobile measurements of sediment movement. A fiber-optic cable is required to transmit the data flow to shore. Drs. Thornton and Stanton are also adding side-scan sonar and digital sonar-altimeters to the CRAB in order to map out the presence of

Table 1. SandyDuck Participating Organizations

Agencies	1	U.S. Army Engineer Waterways Experiment Station
	2	United States Geological Survey
	3	Office of Naval Research
	4	Naval Command Control and Ocean Surveillance Center
	5	Naval Research Laboratory
	6	Naval Postgraduate School
Universities	7	Dalhousie University (Canadian)
	8	Duke University
	9	Oregon State University
	10	North Carolina State University
	11	Scripps Institution of Oceanography
	12	University of California, Berkeley
	13	University of Delaware
	14	University of East-Anglia (United Kingdom)
	15	University of Florida
	16	University of Washington
	17	University of Wisconsin, Eau Claire
	18	Virginia Institute of Marine Science
	19	Washington State University
Companies	20	Neptune Sciences, Inc.

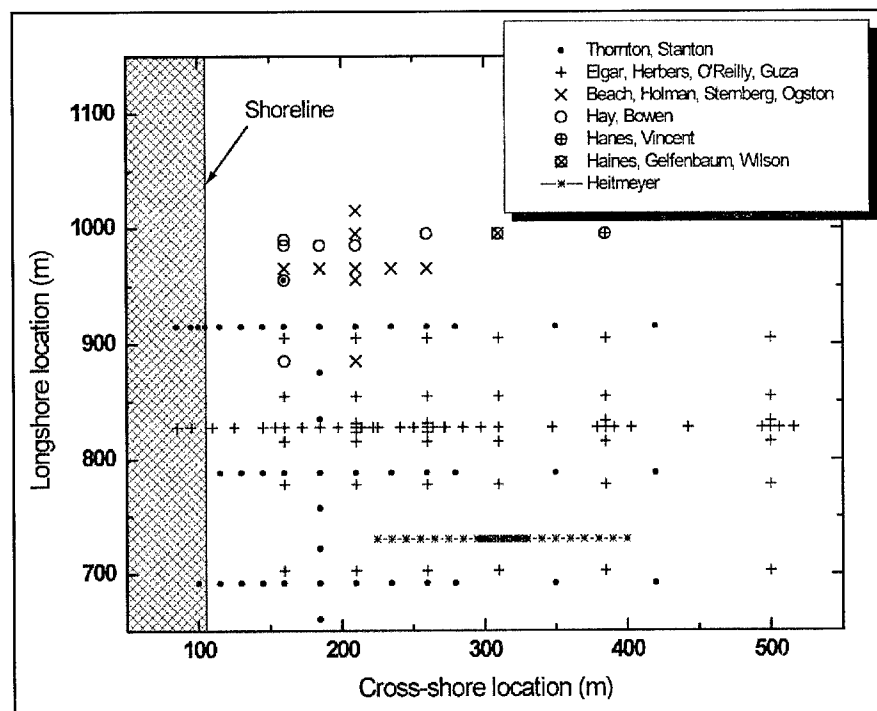


Figure 1. SandyDuck instrument layout

Table 2. SandyDuck Experiments
(Number in parentheses refers to organization from Table 1)

Number	Investigators	Experiment Title	Wave Shoaling	Nearshore Circulation	Boundary Layers	Swash Processes	Small-Scale Sediments	Meso/Macro Morphology	Water Properties
1	Anderson(4)	GPS sounder							X
2	Beach(9), Holman, Sternberg, Ogston	Fluid-sediment interactions in the surf zone		X	X		X		
3	Drake(10), Snyder	Side-scan sonar studies of nearshore morphology in the vicinity of Duck, NC						X	
4	Elgar(19), Herbers, O'Reilly, Guza	Surf zone waves, currents, and morphology	X	X		X		X	
5	Fabre(20), Wilson	Shallow-water wave and surf-generated noise							X
6	Friedricks(18), Brubaker, Wright, Vincent	Cross-shoreface suspended sediment: a response to the intersection of nearshore and shelf processes		X	X		X		
7	Haines(2), Gelfenbaum, Wilson	Vertical structure, bedforms, turbulence		X	X		X		
8	Hanes(15), Vincent	Near-bed intermittent suspension		X			X		
9	Hay(7), Bowen	Nearshore sediment dynamics: suspension, bedforms, and bubbles		X	X		X		X
10	Heitmeyer(5)	Surf-noise experiment							X
11	Herbers(6), O'Reilly, Guza	Wave propagation across the continental shelf	X						
12	Holland(5), Sallenger	Swash zone morphology				X			
13	Holman(9)	Large-scale morphology						X	
14	Howd(8), Hathaway	Shoreface processes and resulting bed response	X	X				X	
15	Howd(8), Beavers	Geologic signature of storm events on the inner continental shelf and outer surf zone						X	
16	Jensen(1)	Evolution of wave spectra in shallow water II	X						
17	Jol(17)	Ground-penetrating radar of the beach and shoreface						X	
18	Lippmann(11)	Observations of nearshore wave breaking, whitecapping, and large-scale sandbar morphology	X		X				
19	Long(1)	Wind wave frequency-direction spectral measurements	X						
20	Miller(1), Resio	Sediment transport rates during storms			X		X		
21	Smith(11)	Observations of waves and currents near the surf zone	X	X					
22	Su(5), Teague	Coastal breaking wave and bubble measurements							X
23	Svendsen(13), Kirby	Models of nearshore circulation	X	X					
24	Thornton(6), Stanton	Nearshore wave and sediment processes	X	X	X		X		
25	Trizna(5), Kirby	Investigations of Boussinesq wave models in the near surf zone	X	X					
26	Trizna(5)	Marine radar remote sensing of bar and rip morphology						X	

bottom bed forms as the CRAB conducts its surveys of the area.

The sled measurements complement a large number of other suspended sediment concentration gauges which will be deployed, including additional optical backscattering sensors (Experiments 6, 7, and 20), the innovative and less intrusive fiber-optic backscattering

sensors (Experiments 2 and 20), and acoustic concentration profilers (Experiments 8 and 9). A team of CHL scientists led by Mr. Carl Miller and Dr. Don Resio will operate the mobile Sensor Insertion System (Figure 4) located on the FRF pier to collect sediment transport measurements during high-energy conditions (Experiment 20).

Most array positions will include one or more current meters (Experiments 2, 4, 7, 8, 9, 14, 20, and 24). New to SandyDuck '97 is the experiment of Dr. Smith (Experiment 21) to deploy his two *secscan* sonars. Used in combination and deployed along the -6.5-m contour, they look toward the beach and are able to provide two-dimensional (horizontal) maps of the velocity field measuring rip currents and nearshore circulation over an area 200 x 500 m. Incident wave conditions will be monitored with directional wave buoys (Experiments 11 and 16) and a direction-sensing array of pressure gauges (Experiment 19). Measurements of the shoreface seaward of the surf zone will be made with bottom-mounted instruments (Experiments 6 and 14), and through geologic investigations (Experiments 3 and 15).

A number of investigations will use advanced remote sensing techniques to collect experiment data. Surf zone and swash processes will be observed with tower-mounted video systems (Experiments 10, 12, 13, 18, and 22). Hourly time exposure images will be obtained for revealing the underlying bathymetry (Figure 5). Observations will also be made with land-based marine radar systems (Experiments 25 and 26) and global satellite positioning (GPS) systems (Experiment 1). Several studies will examine fundamental nearshore acoustic behavior (Experiments 5, 9, and 10) and bubble production (Experiments 9, 22, and 24), both topics of critical interest to the Navy.

As in the past, the CRAB will be used to collect daily maps of the bathymetry surrounding the instruments in an area known as the *minigrad*. These surveys will be augmented by daily beach surveys over multi-kilometer reaches of shoreline to examine large and medium-scale patterns of beach changes. These surveys will be collected with a GPS surveying all-terrain vehicle (Experiment 13). An early version of this system (Dolly) was used successfully by Dr. Holman and his students during DUCK94 (Figure 6).



Figure 2. SIO instrument frames during DUCK94

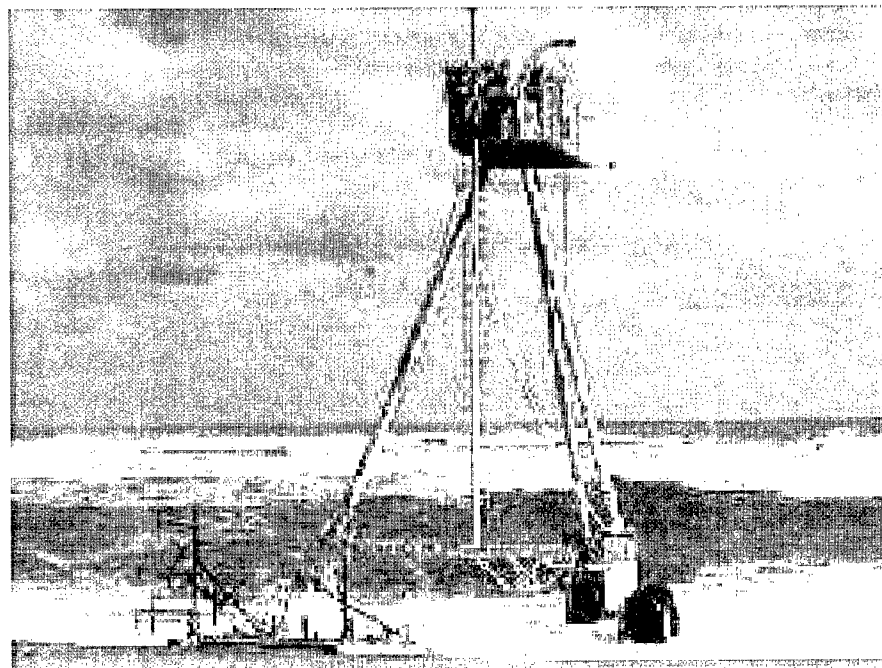


Figure 3. The CRAB deploying the Naval Postgraduate School instrumented sled during DUCK94

Clearly, SandyDuck '97 is an ambitious undertaking with many different experiments all benefitting from synergy of efforts and instrumentation. Measurements will end 31 October 1997, with instrument removal during November. Many participants will have been away from home for nearly 5 months of continuous, exciting, and challenging efforts. Based on DUCK94, the effort will be well worth it. Using the 1996 fall meeting of the American Geophysical Union as a guide to research in progress, some 35 presentations were made on research conducted at the Duck field site. Much of this research is of fundamental importance to Corps interest in beach-related processes.

Further Information

More information about SandyDuck '97, including complete descriptions of the experiments, can be found on the World Wide Web at <http://www.frf.usace.army.mil>. This site will be frequently updated during the experiment so it will be easy to stay current regarding ongoing activities. For additional information, contact William Birkemeier at b.birkemeier@cerc.wes.army.mil or by phone at (919) 261-6840 ext. 229.

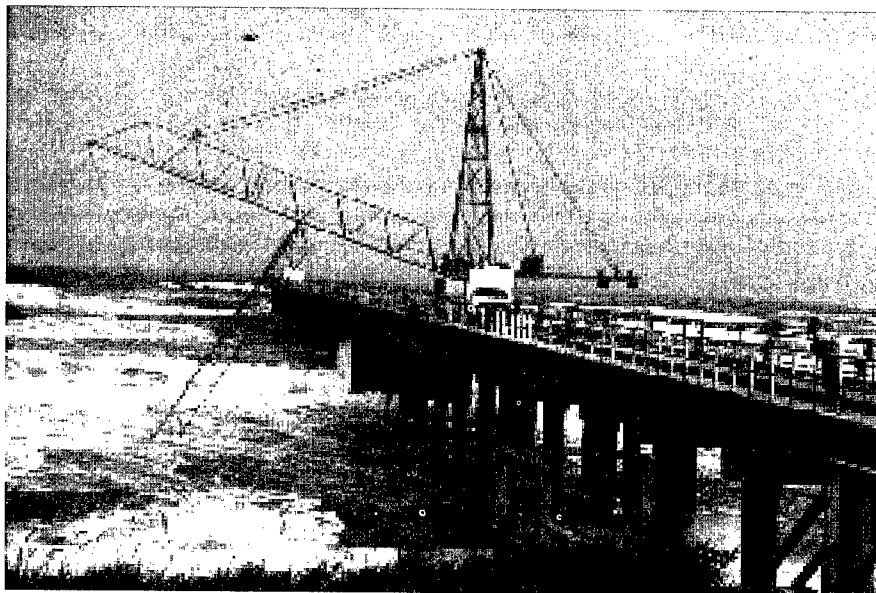


Figure 4. The Sensor Insertion System making measurements from the FRF pier

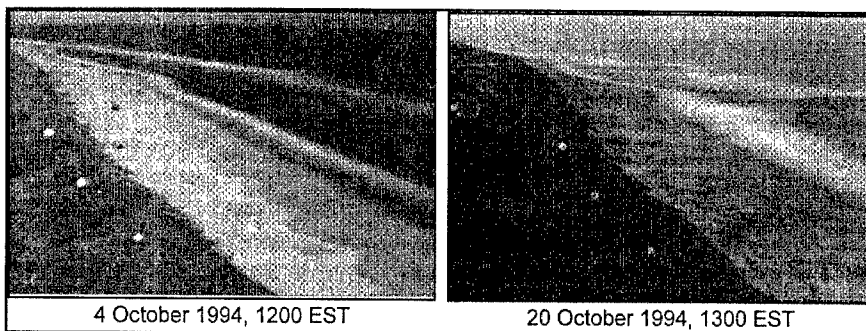


Figure 5. Time-exposure images showing DUCK94 morphology

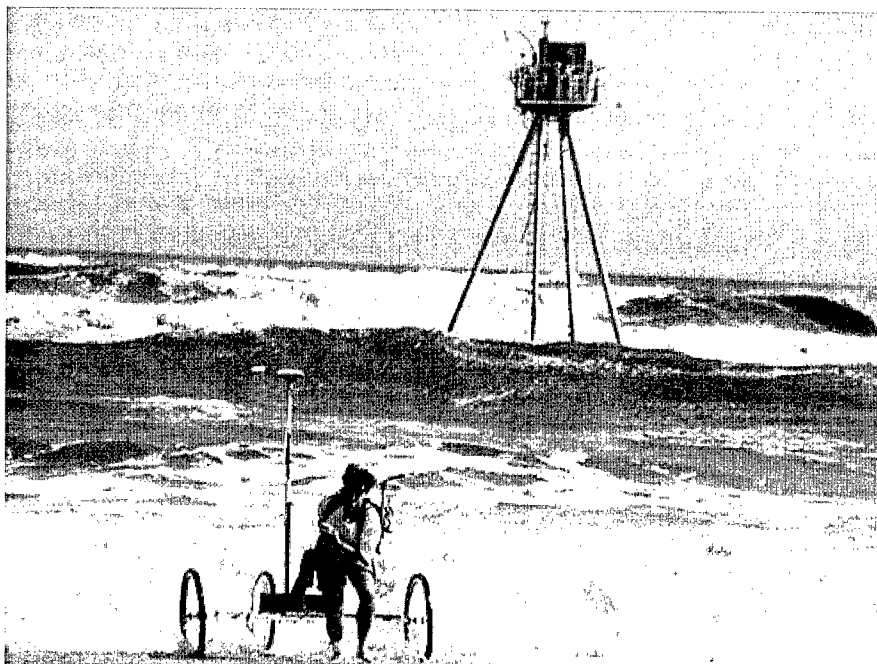


Figure 6. The CRAB conducting a minigrid survey with the "Dolly" surveying in the foreground

Dredging Operations and Environmental Research (DOER) Program

by Clark McNair

Background

Waterway transportation is the most economical means for moving national and international commerce. Protection and enhancement of the environment associated with United States waterway infrastructure operation and maintenance is a national priority. The U.S. Army Corps of Engineers (USACE) is faced with the challenge of maintaining a viable navigation system through dredging while providing environmental protection to the nation's resources. Thus, dredging operations and environmental requirements of navigation projects are inseparable. Dredging costs to maintain viable navigation, now in excess of \$500 million annually, are increasing. These costs are borne by the dredging projects and are exacerbated by federal and state agencies charged with assuring environmental sustainment.

Research and development is an integral component of managing the USACE dredging program. Dredging research in the 1970s focused on understanding ecological impacts of dredged material disposal, and on evaluating and managing sediments. In the 1980s, research focused on reducing costs of dredging, improving dredging operations, and increasing project management efficiency. Accomplishing the navigation dredging mission while balancing environmental protection is the major challenge of the 1990s and into the 21st century. Integration of operational and environmental aspects of dredging and disposal must be accomplished within a climate of increased dredging workload need and environmental constraints with decreasing fiscal and manpower resources. Objectives of

the USACE Dredging Operations and Environmental Research (DOER) Program are to develop technologies, methodologies, and techniques to assure that the operational and environmental issues of the USACE dredging program are adequately and efficiently met.

The DOER Program

The DOER Program was formulated toward addressing documented problems of the primary Corps users (field operating Division and District offices). The problems identified by the field offices were categorized into six specific applied research focus areas, each with work tasks describing objectives, research methodologies, user products, and time/cost schedules. The USACE Directorate of Research and Development delegated primary responsibility for executing the DOER Program to WES, with research being performed by the WES Coastal and Hydraulics Laboratory (CHL), Environmental Laboratory (EL), and Geotechnical Laboratory. The 8-year, \$48-million DOER program was initiated in October 1996, and is scheduled for completion at the end of September 2004. The DOER executive program manager is Dr. Robert Engler, WES EL, phone (601) 634-3624, e-mail engler@ex1.wes.army.mil. DOER operational program manager is Mr. Clark McNair, WES CHL, phone (601) 634-2070, e-mail mcnaic@ex1.wes.army.mil

The DOER Program will investigate dredging issues in six focus areas: (1) **Nearshore and Offshore Placement of Dredged Material;** will predict the time-dependent movement of noncontaminated sand and sand/silt mixture of dredged materials placed in the nearshore zone, and all materials placed in the

offshore region. (2) **Environmental Windows for Dredging Operations;** will work to reduce cost of dredging operations attributable to compliance with environmental windows that are determined to be over-restrictive, inconsistent, or technically unjustified. (3) **Contaminated Sediment Characterization and Management;** will reduce costs and enhance the reliability and acceptability of methods associated with the assessment, dredging, placement, management, and control of contaminated sediments from Corps navigation projects. (4) **Instrumentation for Dredge and Site Monitoring;** will implement automated dredge inspection and innovative dredge contract payment methods, characterize and delineate possible contaminated areas of Corps dredging projects, and provide a cost-effective method to accurately monitor cap status with improved timeliness, spatial extent, and reduced effort. (5) **Demonstration of Innovative Equipment and Process Technologies;** will conduct demonstrations of emerging dredging technologies and operations in cooperation with the USACE field operating offices and other resource agencies, and provide documentation of results by video and written reports. (6) **Ecological Risk Management for Dredging and Disposal Projects;** will develop a technically sound approach for characterizing and managing risk that makes use of existing guidance (the dioxin management strategy, and the technical framework) and proven tools for conducting risk-based evaluations of dredged material that are consistent with the U.S. National Academy of Science/U.S. Environmental Protection Agency (EPA) paradigms for risk assessment. More information

regarding DOER is available on the insert included in this issue.

Benefits of the DOER Program

Benefits will include cost-effective practices for dredging and dredged material disposal; environmental protection enhancement through application of effective environ-

mental windows; compliance with environmental statutes for identifying and managing contaminated sediments; reduction of costs of disposal of dredged material by beneficial placement in the nearshore zone; greater flexibility in dredging in sensitive ecological areas; and expanded options for beneficial uses of contaminated and noncontaminated dredged materials. This research is being conducted with

full coordination and cooperation of other appropriate agencies, including the EPA, the U.S. National Marine Fisheries Service, and the U.S. Fish and Wildlife Service. The DOER Program includes an aggressive technology transfer mechanism to ensure rapid implementation of research products into Corps projects.

Science and Engineering Apprentice Program

During the summer of 1997, the WES Coastal and Hydraulics Laboratory will be participating for the fifth year in the Science and Engineering Apprentice Program sponsored by the Department of Defense and administered through The George Washington University. In this program, high school students pursue scientific experiences

with a scientist or engineer who serves as a mentor to the apprentice for eight weeks during the summer. The students may work on a discrete project, may contribute to ongoing research, or may work on a project with intermittent activity. Students are required to write a paper at the end of the summer describing the importance and relevance of

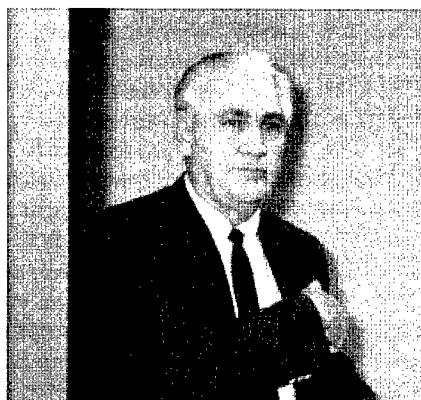
their work as well as what they have learned. In addition, a competition is held at which all participants at WES present their papers. The top two papers at WES travel to Washington, D.C., to present with approximately 700 other program participants at the closing ceremonies at The George Washington University.

Calendar of Coastal Events

- June 1-5, 1997 **International Association for Great Lakes Research**, Buffalo, NY, USA, POC: IAGLR Office, 2200 Bonisteel Blvd, University of Michigan, Ann Arbor, MI 48109
- June 23-25, 1997 **Coastal Engineering 97: Computer Modelling of Seas and Coastal Regions**, La Coruna, Spain, POC: Sue Owen, phone 44 (0) 1703 293 223, fax 44 (0) 1703 292 853, e-mail sue@wessex.witcmi.ac.uk
- June 23-27, 1997 **Coastal Dynamics 97: International Conference on Coastal Research Through Large-Scale Experiments**, University of Plymouth, United Kingdom, POC: Denise Horne, phone 44 (0) 1752 233 304, fax 44 (0) 1752 233 310, e-mail dhorne@plymouth.ac.uk
- June 28 - July 3, 1997 **WEDA XVIII: Western Dredging Association Annual Meeting "Dredging: The International Business," Exhibition, and 30th Annual Texas A&M University Dredging Seminar**, Charleston, SC, USA, POCs: Ronald E. Wills, Hartman Associates, 810 3rd Ave., Suite 408, Seattle, WA 98104, phone (206) 382-0388; Robert E. Randall, Department of Civil Engineering, Texas A&M University, College Station, TX 77843-4568, phone (409) 845-4568; Carol M. Sanders, Sanders & Associates, Inc., 218 Main Street, Suite 373, Kirkland, WA 98033S, phone (206) 828-8998
- July 9-23, 1997 **Coastal Vulnerability: Natural and Human Dimensions**, European Union Advanced Study Course, Barcelona, Spain, POC: Maria Ruiz, Coastal Vulnerability Advanced Study Course Secretariat, CIIRC-International Center for Coastal Resources Research, Gran Capita s/n, module D-1, 08034 Barcelona, Spain, phone 34 3 280 6400, fax 34 3 280 6019, e-mail arcilla@etseccpb.upc.es, <http://www.upc.es/ciir/eng/edu/97vulner/index.html>
- July 20-26, 1997 **Coastal Zone 97: Charting the Future of Coastal Zone Management; The Next 25 Years**, Boston, MA, USA, POC: Martin Miller, U.S. Army Engineer Waterways Experiment Station, ATTN: CEWES-CR-O, 3909 Halls Ferry Road, Vicksburg, MS 39180-6199, phone (601) 634-3999, fax (601) 634-4314, e-mail m.miller@cerc.wes.army.mil, internet address <http://infinitfaculty.com/cz97/>
- July 28 - August 1, 1997 **Beneficial Uses of Dredged Material International Workshop**, Baltimore, MD, USA, POCs: Mary Landin, U.S. Army Engineer Waterways Experiment Station, ATTN: CEWES-ER-W, 3909 Halls Ferry Road, Vicksburg, MS 39180-6199, phone (601) 634-2942, fax (601) 634-4016, e-mail landinm@ex1.wes.army.mil; Thomas Patin, e-mail patint@ex1.wes.army.mil; Joseph Wilson, e-mail joe.wilson@inet.hq.usace.army.mil; Thomas Chase, e-mail chase.tom@epamail.epa.gov; John Gill, e-mail john_gill@mail.fws.gov; Billy Teels, e-mail billy_teels@nbs.gov
- August 10-15, 1997 **International Association for Hydraulic Research, 27th IAHR Congress: Water for a Changing Global Community**, San Francisco, CA, USA, POC: ASCE, 1801 Alexander Bell Drive, Reston VA 20191, phone (703) 295-6000, fax (703) 295-6222, e-mail conf@asce.org
- August 26 - September 12, 1997 **MEDCOAST Institute 97: The Fourth Training Programme on Coastal Zone Management in the Mediterranean and the Black Sea**, Ankara-Marmaris, Turkey, POC: Cigdem Gencel, MEDCOAST Secretariat, Middle East Technical University, 06531 Ankara, Turkey, phone (90 312) 210 54 29/30/35, fax (90 312) 210 14 12, e-mail medcoast@rorqual.cc.metu.edu.tr
- September 7-11, 1997 **International Conference on Contaminated Sediments: Restoration and Management**, Rotterdam, Netherlands, POC: Conference Secretariat, P.O. Box 1558, 6501 BN NIJMEGEN, The Netherlands, fax (3124) 360 1159
- September 7-11, 1997 **Pacific Coasts and Ports 97**, incorporating **13th Australasian Coastal and Ocean Engineering Conference** and the **6th Australasian Port and Harbour Conference**, Christchurch, New Zealand, POC: Megan O'Brien, P.O. Box 10330, Christchurch, New Zealand, phone 64 3 379 0390, 64 3 379 0460, e-mail j.lumsden@cae.canterbury.ac.nz
- September 16-19, 1997 **Fifth Symposium on the Biochemistry of Wetlands**, Royal Holloway and Bedford New College, University of London, London, England, Co-sponsors: Louisiana State University, Wetland Biogeochemistry Institute; and University of Florida, Institute of Food and Agricultural Sciences; POC: Karen Gros, Louisiana State University, phone (504) 388-8810, fax (504) 388-6423; Royal Holloway Institute for Environmental Research, fax +44 (0) 1784 477427, e-mail rhier@rhbnc.ac.uk
- October 6-9, 1997 **Oceans 97**, Halifax, Nova Scotia, Canada, POC: e-mail oceans97@sirius.ns.ca

William R. Murden, 1922-1997

Mr. William R. (Bill) Murden, former Chief of the Corps of Engineers Dredging Division, died on 15 March 1997. Bill was a world-renowned expert on dredging and marine engineering. This expertise was recognized by his election to membership in the prestigious National Academy of Engineering. He was a Commissioner Emeritus of the Permanent International Association of Navigation Congresses, and was chairman of a committee of the London Convention on Marine Pollution. The American Society of Civil Engineers honored Bill by dedicating the DREDGING '94 Specialty Conference to his honor. He received numerous other awards and was active in a number of other national and international professional technical societies.



Bill was a true innovator and a champion of research and development. As Chief of the Dredging Division, he implemented many of the results of the Dredged Material Research Program and sponsored the Dredging Operations Technical Support (DOTS) Program. His

strong support was critical to the establishment of the Long-term Effects of Dredging Operations (LEDO) Program. He provided leadership in development of the Dredging Research Program (DRP), being involved personally in the technical aspects of the work and in shepherding the approval process through the Administration and Congress. Although retired from the government during the development of the new Dredging Operations and Environmental Research (DOER) Program, his counsel was frequently sought and gladly given.

Bill leaves his wife and true partner, Dottie, as well as countless friends and colleagues worldwide.



David A. Leenknecht, 1951-1997

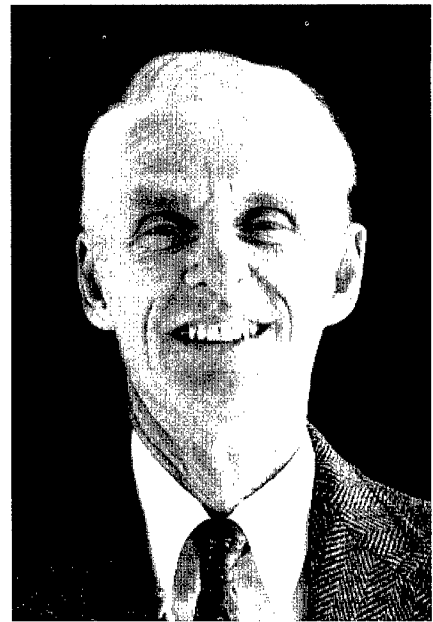
David A. Leenknecht, a research engineer with the WES Coastal and Hydraulics Laboratory, died at his home in Vicksburg, MS, on 15 April 1997 at the age of 45 years. A native of East Moline, Illinois, he had worked at WES for the past 15 years. He was well known throughout the Corps as a leader in the development of the Automated Coastal Engineering System (ACES) computer application of coastal engineering numerical simulation modeling. Prior to coming to WES, he had been employed by

the New Orleans District of the Corps of Engineers as a hydraulic engineer. Dave received his bachelor of science degree from Bradley University, and his master of science degree from Tulane University. He was active in local theatricals and choirs, and was a talented photographer. He received several awards for his photographic work in documenting stained glass windows of local churches. Memorials can be made to Vicksburg Chamber Choir, P.O. Box 821894, Vicksburg, MS 39182.

New Coastal Engineering Research Board Member

Dr. Richard W. Sternberg, Acting Director, School of Oceanography, University of Washington, Seattle, WA, was recently appointed to a 2-year term as a member of the

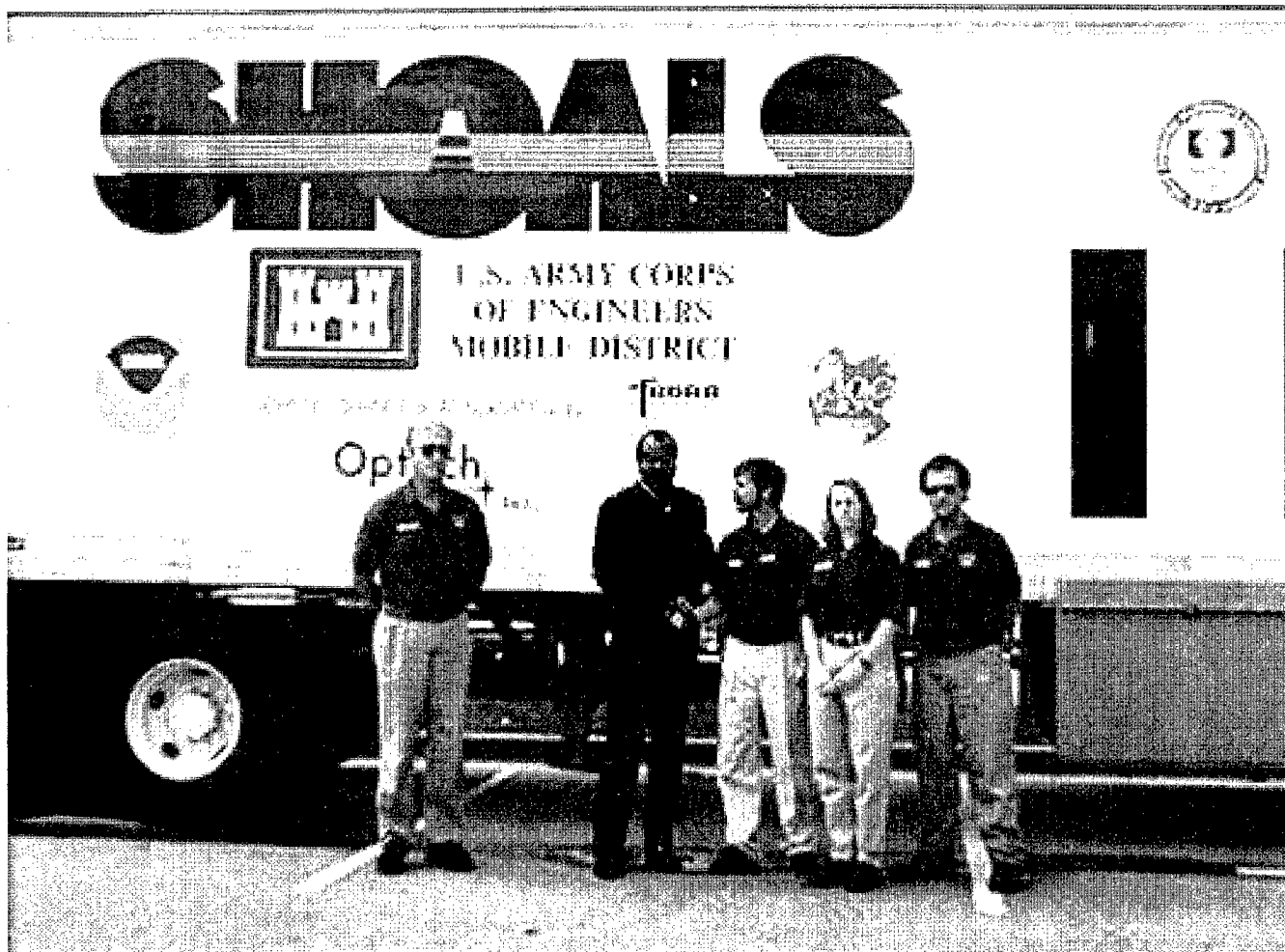
Coastal Engineering Research Board. Dr. Sternberg replaces Dr. Paul D. Komar, Oregon State University, Corvallis, OR, whose term expired in March 1997.



WES Engineer Wins International Award

Jennifer Irish, an engineer in the WES Coastal and Hydraulics Laboratory, has been named recipient of the 1997 Permanent International Association of Navigation Congresses' (PIANC) Gustave Willems Award. This international award was established in 1985 and recognizes the most outstanding technical paper on design, construction, improvement, maintenance, or operation of inland and maritime waterways, inland and maritime ports, and coastal areas. Competition is open to anyone 35 years of age or younger. Ms. Irish won the

award for her paper "Sensitivity of Channel Sedimentation Prediction to Wave-Field Characterization." She has been invited as a guest of PIANC to present her paper and receive the Gustave Willems Award at the 1997 PIANC General Assembly in Venice, Italy, 12-16 May 1997. No U.S. competitor has won this international award since 1990. Ms. Irish, originally from Towson, Maryland, came to WES in July 1994. She received her bachelor's and master's degrees in civil engineering from Lehigh University in Bethlehem, Pennsylvania.



Chief of Engineers Briefed on SHOALS

During a recent visit to the Corps' Mobile District, LTG Joseph N. Ballard, Chief of Engineers, Washington, DC, was briefed on SHOALS (Scanning Hydrographic Operational Airborne Lidar Survey), a system that uses a helicopter-mounted laser to survey coastal bathymetry, beaches, navigation channels, and structures. Developed under a program managed by

the U.S. Army Engineer Waterways Experiment Station (WES), SHOALS is operated by the Airborne Lidar Bathymetry Technical Center of Expertise (ALBTCX), a Mobile-based joint venture between the District and WES. Following the briefing, LTG Ballard stated that he wanted to integrate SHOALS capabilities and ALBTCX expertise into the military inventory to support

Army coastal zone operations around the world. Pictured are (from left to right) Carl Lang, John Chance and Associates (SHOALS operating contractor); LTG Ballard; Jeff Lillycrop, WES Program Manager for SHOALS development and ALBTCX Director; Jennifer Irish, WES; and Mark Brooks, John Chance and Associates.

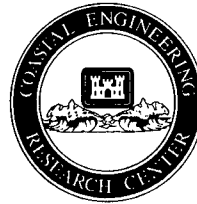


US Army Corps
of Engineers
Waterways Experiment
Station

The Corps' Coastal Vision Statement

We will, as the National Coastal Engineer:

- Continue our leadership in the protection, optimization, and enhancement of the Nation's coastal zone resources.
- Increase our contribution to the Nation's economy, quality of life, public safety, and environmental stewardship.



The **CERCular**
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Contributions of pertinent information are solicited from all sources and will be considered for publication. Communications are welcomed and should be addressed to the U.S. Army Engineer Waterways Experiment Station, Coastal and Hydraulics Laboratory, ATTN: Dr. Lyndell Z. Hales, 3909 Halls Ferry Road, Vicksburg, MS 39180-6199, or call (601) 634-3207, FAX (601) 634-4253, Internet: l.hales@cerc.wes.army.mil

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